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CLAIMS

Having thus described the invention, we claim:

1. A hand-held tool for evaluating a fitting assembly of the type having a conduit and a fluid coupling installed thereon, comprising:

a source adapted to apply mechanical energy waves into the fitting assembly; said source receiving reflected energy waves and producing a signal related thereto; and

an analyzer that determines a characteristic of the fitting assembly as a function of said reflected portions of said energy waves.

- 2. The tool of claim 1, wherein the source is integrated with a gap gauge.
- 3. The tool of claim 1, wherein the analyzer is integrated with a gap gauge.
- 4. The tool of claim 1, wherein said tool includes a gap gauge and an ultrasonic analyzer.
- 5. The tool of claim 1, wherein said source comprises a separate transmitter and receiver.
- 6. The tool of claim 1, wherein said source produces transient shear ultrasonic energy waves.
 - 7. The tool of claim 1, wherein said analyzer correlates said received energy waves.
 - 8. The tool of claim 7, wherein said correlation is based on a Morlet wavelet correlation function.
- 9. The tool of claim 1, wherein said energy waves are applied to a fitting body that is associated with the fluid coupling.
 - 10. The tool of claim 1, wherein said energy waves are applied to the conduit at an angle within the range of about greater than 0° to about 90° from normal relative to a longitudinal axis of the conduit.
 - 11. The tool of claim 1, wherein said characteristic relates to bottoming of an end of the conduit in the fluid coupling.

- 12. The tool of claim 10, wherein said energy waves are input at two or more different locations about the conduit, said source producing a plurality of electrical signals in response to said received energy waves, each electrical signal corresponding to a respective one or said locations.
- The tool of claim 12 comprising a correlation function of said plurality of electrical signals and wherein said analyzer produces an output that corresponds to axial position of an end of the conduit based on said correlation.